Russian Journal of Developmental Biology 2008 vol.39 N5, pages 269-274

Purinergic regulation of rat heart function in ontogeny

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Abstract

The effect of exogenous ATP and its analogs on heart function was studied in 14-100-day-old rats. Extracellular purines had a positive chronotropic effect on the heart. Intravenous administration of exogenous ATP and its stable analogs induced a dose-dependent increase in heart rate depending on animal age. The analysis of isometric contraction of myocardial strips demonstrated a dose-dependent positive inotropic effect of ATP. The family and subtype of the P2 receptors realizing the positive chronotropic and inotropic effects were identified using selective agonists and blockers. P2X receptors demonstrated the highest sensitivity during early postnatal ontogeny. The age-related pattern of the receptor response to exogenous purines indicated the heterochronic maturation of P2X and P2Y receptors in the myocardium. © 2008 MAIK Nauka.

http://dx.doi.org/10.1134/S1062360408050020

Keywords

ATP, Myocardium, Ontogeny, P2 receptors